



Course guides

250326 - PETROL - Petrology

Last modified: 12/12/2019

Unit in charge: Barcelona School of Civil Engineering
Teaching unit: 1004 - UB - (ENG)Universitat de Barcelona.

Degree: BACHELOR'S DEGREE IN GEOLOGICAL ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2019 **ECTS Credits:** 7.5 **Languages:** Catalan

LECTURER

Coordinating lecturer: DOMINGO GIMENO TORRENTE

Others: DOMINGO GIMENO TORRENTE

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

4035. Mineralogical, petrographic and geotechnical tests. Sample techniques.

4036. Students will learn to select the most appropriate sampling and implementation techniques for mineralogical, petrographic and geotechnical surveys.

Transversal:

591. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.

598. EFFECTIVE USE OF INFORMATION RESOURCES - Level 2. Designing and executing a good strategy for advanced searches using specialized information resources, once the various parts of an academic document have been identified and bibliographical references provided. Choosing suitable information based on its relevance and quality.

601. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

TEACHING METHODOLOGY

The course consists of 5 hours per week of classroom activity (large size group).

The 3 hours in the large size groups are devoted to theoretical lectures, in which the teacher presents the basic concepts and topics of the subject, shows examples and solves exercises.

Support material in the form of a detailed teaching plan is provided using the virtual campus ATENEA: content, program of learning and assessment activities conducted and literature.

LEARNING OBJECTIVES OF THE SUBJECT

Students will acquire an understanding of petrology and learn how this discipline applies to scientific and technical problems and to geological engineering in general.

Upon completion of the course, students will be able to:

1. Describe and correctly identify sedimentary, igneous and metamorphic rocks in the context of civil engineering of public works (cross-section mapping, survey testing, etc.);
2. Predict the three-dimensional evolution of rock bodies in the Earth's crust;
3. Determine the appropriate diagnostic tests for each type of rock.

Magma: Genesis and crystallisation; Streckeisen's classification of igneous and complementary rocks; Intrusive relationships, intrusive facies, hypabyssal, abyssal and volcanic rocks; Morphology and dimensions of igneous rock bodies; Sedimentary rocks: Types and formation environments; Lithofacies; Principal groups and classification of sedimentary rocks; Metamorphic rocks: Formation conditions, types of metamorphism, compositional groups, metamorphic facies; Physical, chemical and mineralogical characteristics of rocks

STUDY LOAD

Type	Hours	Percentage
Hours medium group	27,0	14.40
Guided activities	7,5	4.00
Hours small group	18,0	9.60
Hours large group	30,0	16.00
Self study	105,0	56.00

Total learning time: 187.5 h

CONTENTS

Sedimentary rocks

Description:

External Cycle
Sediments and sedimentary rocks
Siliciclastic Rocks
Carbonate Rocks
Evaporitic rocks
Siliciclastic Rocks
Carbonate Rocks
Evaporitic rocks
field trip

Full-or-part-time: 60h

Theory classes: 10h
Practical classes: 4h
Laboratory classes: 11h
Self study : 35h



Igneous rocks

Description:

Igneous Rocks
Igneous Rocks
Field exercitation

Full-or-part-time: 62h 24m

Theory classes: 9h
Laboratory classes: 17h
Self study : 36h 24m

Metamorphic Rocks

Description:

Metamorphic Rocks
Metamorphic Rocks
Field exercitation

Full-or-part-time: 57h 35m

Theory classes: 7h
Practical classes: 4h
Laboratory classes: 13h
Self study : 33h 35m

GRADING SYSTEM

The mark of the course is obtained from the ratings of continuous assessment and their corresponding laboratories and/or classroom computers.

Continuous assessment consist in several activities, both individually and in group, of additive and training characteristics, carried out during the year (both in and out of the classroom).

The teachings of the laboratory grade is the average in such activities.

The evaluation tests consist of a part with questions about concepts associated with the learning objectives of the course with regard to knowledge or understanding, and a part with a set of application exercises.

Criteria for re-evaluation qualification and eligibility: Students that failed the ordinary evaluation and have regularly attended all evaluation tests will have the opportunity of carrying out a re-evaluation test during the period specified in the academic calendar. Students who have already passed the test or were qualified as non-attending will not be admitted to the re-evaluation test. The maximum mark for the re-evaluation exam will be five over ten (5.0). The non-attendance of a student to the re-evaluation test, in the date specified will not grant access to further re-evaluation tests. Students unable to attend any of the continuous assessment tests due to certifiable force majeure will be ensured extraordinary evaluation periods.

These tests must be authorized by the corresponding Head of Studies, at the request of the professor responsible for the course, and will be carried out within the corresponding academic period.

EXAMINATION RULES.

Failure to perform a laboratory or continuous assessment activity in the scheduled period will result in a mark of zero in that activity.



BIBLIOGRAPHY

Basic:

- Arche, A. (ed.). *Sedimentología: del proceso físico a la cuenca sedimentaria*. Madrid: Consejo Superior de Investigaciones Científicas, 2010. ISBN 9788400091453.
- Tucker, M.E. *Sedimentary petrology: an introduction to the origin of sedimentary rocks*. 3rd ed. Oxford: Blackwell Science, 2001. ISBN 0632057351.
- Adams, A.E.; Mackenzie, W.S.; Guilford, C. *Atlas de rocas sedimentarias*. Masson, 2007. ISBN 9788445804278.
- Marfil, R.; de la Peña, J.A. "Diagénesis: rocas siliciclásticas y rocas carbonáticas". Arche, A. *Sedimentología*: vol. 2. Madrid: CSIC, 1992. vol. 2, cap. 16, pp. 343-427.
- Blatt, H.; Middleton, G.; Murray, R. *Origin of sedimentary rocks*. 2nd ed. Englewood Cliffs, New Jersey: Prentice Hall, 1980. ISBN 0136427103.
- McBirney, A.R. *Igneous petrology*. 3rd ed. Boston: Jones and Bartlett, 2007. ISBN 9780763734480.
- Middlemost, E.A.K. *Magmas and magmatic rocks: an introduction to igneous petrology*. London: Longman, 1985. ISBN 0582300800.
- Winter, J.D. *An introduction to igneous and metamorphic petrology*. Upper Saddle River, NJ: Prentice Hall, 2001. ISBN 0132403420.
- Thorpe, R.; Brown, G.C. *The field description of igneous rocks*. Chichester: John Wiley and Sons, 1993. ISBN 0471932752.
- Fry, N. *The field description of metamorphic rocks*. Chichester: John Wiley and Sons, 1992. ISBN 0471932213.
- Le Maitre, R.W. (ed.). *Igneous rocks: a classification and glossary of terms: recommendations of the international union of geological sciences, subcommission on the systematics of igneous rocks*. 2a ed. Cambridge: Cambridge University Press, 2002. ISBN 052166215X.
- Tucker, M.E. *Sedimentary rocks in the field*. 3rd ed. Chichester [etc.]: Wiley, 2003. ISBN 9780470851234.
- Mackenzie, W.S.; Donaldson, C.H.; Guilford, G. *Atlas de rocas ígneas y sus texturas*. Masson, 1997. ISBN 9788445804285.
- Yardley, B.W.D. *An introduction to metamorphic petrology*. Essex: Longman Scientific and Technical, 1989. ISBN 0470211962.